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UNEP Meeting of experts designated by Governments, Intergovernmental and Non-Governmental Organizations on the Ozone Layer

Washington, D.C., 1-9 March 1977

SURVEY OF OZONE RESEARCH IN NORWAY - A Summary

Presented by
The Government of Norway

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SURVEY ON OZONE RESEARCH IN NORWAY

Norwegian measurements of total ozone were started in 1939 in Tromsi at 70°N. The record was discontinued in 1974. In shorter periods, measurements have also been made in other places: Dombas (62°N), Oslo (60°N) and at Spitsbergen (79°N). Norway has at its disposal three Dobson instruments which are now being repaired and recalibrated. These instruments will in the near future be placed in Oslo, Tromsi, and at Spitsbergen. Theoretical modelling work has over the last couple of years been concentrated on two topics: Tropospheric ozone, mainly in the lowest layers, and on calculations of solar fluxes and rates of photodissociation in the stratosphere and troposphere. Our tropospheric ozone model cover polluted as well as clean air and was primarily intended for computation of ozone production in urban and industrial areas (photochemical smog). Its flexibility has made it possible to study the chemical development after the polluted air has left its source region. We find the lifetime of ozone in such situations to be 1 - 3 weeks, depending on the conditions. Ozone is therefore spread over large areas without being broken down. Anthropogenic production of ozone in urban areas will therefore contribute to a raise (of the order 0, 1 - 1%) in total ozone. The main result of our stratospheric research is a new simplified method to include multiple molecular scattering in models. The solar fluxes, as computed in most models is thereby reduced to an extent which has a considerable impact on the photodissociation rates. An important effect is that on chlorine nitrate: The effect of releases of fluorocarbons upon total ozone, as compared in earlier models, are to be multiplied by a factor of 1.4 when multiple scattering is considered. Our research will be continued along the same lines. We have also developed a 2-D model for use in future studies.

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